
Appendix JA12 – Qualification Requirements for Battery Storage System

JA12.1 *Purpose and Scope*

Joint Appendix JA12 provides the qualification requirements for battery storage system to meet the requirements for battery storage compliance credit(s) available in the standards set forth in Title 24, Part 6, Sections 150.1(b) and 140.10 in combination with an on-site or community solar photovoltaic system, or a separate battery storage system. The primary function of the battery storage system is daily cycling for the purpose of load shifting, maximized solar self-utilization, and grid-harmonization.

JA12.2 *Qualification Requirements*

To qualify as a battery storage system for use for compliance with applicable performance compliance credits, the battery storage system shall be certified to the Energy Commission to meet the following requirements:

JA12.2.1 Safety Requirements

The battery storage system shall be tested in accordance with the applicable requirements given in UL1973 and UL9540. Inverters used with battery storage systems shall be tested in accordance with the applicable requirements in UL1741 and UL1741 Supplement A.

JA12.2.2 Minimum System Performance Requirements

JA12.2.2.1 *Prescriptive Compliance*

The installed battery storage system shall meet or exceed the following ~~performance~~ specifications:

- (a) Usable capacity of at least 5 kWh.
- (b) Single Charge-discharge cycle AC to AC (round-trip) efficiency of at least 80 percent.
- (c) Energy capacity retention of 70 percent of nameplate capacity after 4,000 cycles covered by a warranty, or 70 percent of nameplate capacity under a 10-year warranty.

JA12.2.2.2 Performance Compliance

The installed battery storage system shall meet or exceed the following specifications:

- (a) Usable capacity of at least 5 kWh.
- (b) Energy capacity retention of 70 percent of nameplate capacity after 4,000 cycles covered by a warranty, or 70 percent of nameplate capacity under a 10-year warranty.

JA12.2.3 Control Requirements for Prescriptive and Performance Compliance Paths

The requirements below are applicable to all control strategies.

- (a) The battery storage system shall have the capability of being remotely programmed to change the charge and discharge periods.
- (b) During discharge, the battery storage system shall be programmed to first meet the electrical load of the dwelling unit(s). If during the discharge period the electrical load of the dwelling unit(s) is less than the maximum discharge rate, the battery storage system shall have the capability to discharge electricity into the grid upon receipt of a demand flexibility signal from the local utility or a third-party aggregator.
- (c) The battery storage system shall operate in one of the control strategies listed in JA12.2.3.1, JA12.2.3.2, JA12.2.3.3, and JA12.2.3.4 except during a power interruption, when it may switch to backup mode. If the battery system switches to backup power mode during a power interruption, upon restoration of power the battery system shall immediately revert to the previously programmed JA12 control strategy.
- (d) The battery storage system shall perform a system check on the following dates, to ensure the battery is operating in one of the control strategies listed in JA12.2.3.1, JA12.2.3.2, JA12.2.3.3, and JA12.2.3.4:
 - 1) Within 10 calendar days before the onset of summer TOU schedule, and
 - 2) Within 10 calendar days before the onset of winter TOU schedule.

At the time of inspection, the battery storage system shall be installed to meet one of the following control strategies. The battery storage system also shall have the capability to remotely switch to the other control strategies.

JA12.2.3.1 Basic Control

When combined with an on-site solar photovoltaic system, to qualify for the Basic Control, the battery storage system shall be installed in the default operation mode to allow charging only from an on-site photovoltaic system when the photovoltaic system production is greater than the on-site electrical load. The battery storage system shall discharge only when the photovoltaic system production is less than the on-site electrical load.

JA12.2.3.2 Time-of-Use (TOU) Control

When combined with an on-site solar photovoltaic system, to qualify for the TOU Control, the battery storage system shall be installed in the default operation mode to allow charging only

from an on-site photovoltaic system. The battery storage system shall begin discharging during the highest priced TOU hours of the day. The operation schedule shall be preprogrammed from factory, updated remotely, or programmed during the installation/commissioning of the system. At a minimum, the system shall be capable of programming three separate seasonal TOU schedules, such as spring, summer, and winter.

JA12.2.3.3 Advanced Demand Flexibility Control

When combined with an on-site solar photovoltaic system, to qualify for the Advanced Demand Flexibility Control, the battery storage system shall be programmed by default as Basic Control as described in JA12.2.3.1 or TOU control as described in JA12.2.3.2. The battery storage control shall meet the demand flexibility control requirements specified in Section 110.12(a). Additionally, the battery storage system shall have the capability to change the charging and discharging periods in response to signals from the local utility or a third-party aggregator.

JA12.2.3.4 Controls for Separate Battery Storage Systems

When installed separate from (not in combination with) an on-site solar photovoltaic system, including when the building is served by a community solar PV system, to qualify for the compliance credit, the battery storage system shall be programmed by default to:

1. Start Charging from the grid at the onset of lowest priced TOU hours of the day and start discharging at the onset of highest priced TOU hours of the day, or
2. Meet the demand flexibility control requirements specified in Section 110.12(a), and shall have the capability to change the charging and discharging periods in response to signals from the local utility or a third-party aggregator.

JA12.2.3.5 Alternative Control Approved by the Executive Director

The Executive Director may approve alternative control strategies that demonstrate equal or greater benefits to one of the JA12 control strategies. To qualify for Alternative Control, the battery storage system shall be operated in a manner that increases self-utilization of the PV array output, responds to utility rates, responds to demand response signals, minimizes greenhouse gas emissions from buildings, and/or other strategies that achieve equal or greater benefits than specified in Sections JA12.2.3.1, JA12.2.3.2, JA12.2.3.3, or JA12.2.3.4. This alternative control option shall be accompanied with clear and easy to implement algorithms for incorporation into the compliance software for compliance credit calculations.

JA12.3 Interconnection and Net Energy Metering Requirements

The battery storage system and the associated components, including inverters, shall comply with all applicable requirements specified in Rule 21 and Net Energy Metering (NEM) rules as adopted by the California Public Utilities Commission (CPUC).

JA12.4 *Enforcement Agency*

The local enforcement agency shall verify that all Certificate of Installations are valid. The battery storage systems shall be verified as a model certified to the Energy Commission as qualified for credit as a battery storage system. In addition, the enforcement agency shall verify that the battery storage system is programmed and operational with one of the controls listed in JA12.2.3.1, JA12.2.3.2, JA12.2.3.3, JA12.2.3.4., JA12.2.3.4.5. The programmed control strategy at system final inspection and commissioning shall be the strategy that was used in the Certificate of Compliance.

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